

(3) and Schaevitz DC-SE Series Linear Voltage Differential Transducers (LVDTs).

The thermocouples will be installed to monitor temperature changes for any environmental loadings and environmental effects throughout the life of the structure. The VWGs will be installed to monitor the shrinkage strains and to determine the behavior of the joints with continuity reinforcement. In addition, the LVDTs will be installed to measure longitudinal girder movements. These instruments will be connected to two data acquisition systems located at the intermediate diaphragms of Spans A and D underneath the bridge to record the measurements for the first and second live load test, and for short-term monitoring. The specifics on these instruments, such as instrument location and identification, will be explained in detail later in this section.

### **3.2. Internal Instrumentation Retained Inside Of Girders That Were Used During Girder Casting**

In phase two of the joint project, instruments were cast into the girders of Spans A, B, C, and D of Girder-line 4 at the prestressing plant in Charlotte, NC. The instruments that were embedded into the girders were thermocouples, Electrical Resistance Strain Gages (ERSGs), and VWGs. These instruments were embedded into the girders to accomplish the objectives of phase two, described earlier in Section 1. However, only a portion of the thermocouples and none of the ERSGs were retained for phase three.

Figure 2 and Figure 3 show the cross-sections located at mid-span of each girder where the retained thermocouples are located in those cross-sections.

Identification labels were assigned to each of the thermocouples used in phase two during Matthew Wagner's research, but in phase three new identification labels were